

Building Nuclear Power Partnerships:
Prospects for U.S. and Global Nuclear Developments

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It's a pleasure to be here once again with my friends, associates and representatives from nuclear energy activities around the world.

All of us here today are aware of the growing international enthusiasm about the use of nuclear power and its prospects for further expansion. It seems that every day there are increasing references by the industry, opinion leaders and the press about a revival of nuclear power.

But as all of us know, there is no need to "revive" nuclear power-- it is alive and well in 31 countries, where more than 400 nuclear power reactors are generating 16 percent of the world's electricity. And these power plants are among the world's most productive, dependable, clean, sustainable, safe and economic producers of electricity. Dozens of new nuclear power reactors are also taking shape and others are in the pipeline around the world.

Given the energy and environmental needs and challenges most nations face, the time has come to build on that formidable foundation of nuclear power experience and performance.

We in the nuclear energy community have been calling for the expanded use of nuclear power for a long time. And finally, this call to action is being globally recognized as vital and necessary.

Three compelling factors are driving this new interest in nuclear power:

- Widespread concern about the limited and interruptible supply of fossil fuels,
- Increasingly intense competition that drives up costs for these limited supplies of fuels, and
- Increasing evidence of global climate change and serious environmental and health impacts due to greenhouse gas emissions.

While expanded use of nuclear power is essential, we also recognize it is essential to keep the peaceful atom at work while guarding against diversion or access for weapons purposes. Given the fact that the theme of the 2006 WNA Symposium is "Building the Nuclear Future: Challenges and Opportunities," we will all be hearing about the prospects for global expansion of the use of nuclear power.

So I will limit my remarks today to describing some of the key U.S. efforts in these areas and how they fit into the international picture. I will focus on these three areas:

- First, we are nearing completion of the initial phase of preparations for building a new generation of nuclear power plants in the United States.
- Second, through the Global Nuclear Energy Partnership initiative (GNEP), we will assist other countries in undertaking the use of nuclear power safely and effectively with appropriate nonproliferation safeguards.
- And third, as part of GNEP, the U.S. is now undertaking a program to develop nuclear fuel recycling, incorporating advanced nuclear safeguards technologies into the design of the facilities.

Preparations by the U.S. government and nuclear utility industry

I believe we will see the first announcements for new U.S. nuclear power plants before President Bush leaves office. Already, we are seeing indications that new orders are well into the planning stages. Based on progress to date, I believe we may see our first commitments to nuclear plant licensing and plants themselves as early as next year.

Specifically, we are nearing completion of the initial process to determine and demonstrate that the new designs for commercial nuclear power reactors are viable, that they can be licensed, built and operated in a timely manner, and that they can be financed on economic terms. To paraphrase Mr. Churchill, we are fast approaching the end of the beginning of this process.

This is how we got there. For too many years the U.S. nuclear community saw power reactors licensed, built and operated in other nations in as rapidly as five years or less while in America we faced a myriad of impediments.

The common denominator of these impediments is most often cited as “uncertainty” – Uncertainty about the NRC licensing process ... uncertainty about costs and financing ... and uncertainty about who will take the first steps.

From the beginning, President Bush has placed strong emphasis on development of energy resources. Nuclear energy is a key component of U.S. National Energy Policy as exemplified by the Nuclear Power 2010 program and the Advanced Energy Initiative launched by President Bush in January of this year.

A similar focus on energy by Congress enabled President Bush to sign the first comprehensive energy legislation in more than a decade – the Energy Policy Act of 2005. Among key provisions aimed at stimulating diverse and increased energy supply, EPACT 2005 provides for government action to encourage building a new generation of nuclear plants in the U.S.

The Department of Energy’s Nuclear Power 2010 program addresses the key licensing uncertainty issues and sets the goal to begin construction on a nuclear power plant by 2010. This

is an important public-private partnership with the government as a catalyst, effectively addressing regulatory and financial hurdles that first sponsors of new plants face.

With industry, we are funding the development of combined Construction and Operating License (COL) applications for two consortia, which include utilities, reactor vendors and architect engineering firms. Dominion Energy leads one group and NuStart, which includes ten utilities and two reactor vendors, leads the other.

Both consortia are on track to submit COL applications to the NRC in 2007. Joint efforts will continue to complete the necessary design certification steps for two standardized reactor designs. All tolled, there are now 26 plants, with a number of others pending, that have begun the pre-license application planning process.

This progress would not have been possible without addressing new ways to mitigate the initial financial risks posed by such substantial new power generation facilities.

Federal Government Risk Management Actions

To address uncertainty regarding licensing in the United States at this time, the government will provide regulatory risk insurance to the first six new advanced nuclear reactors—up to \$500 million for the first two and \$250 million for the following four reactors. This so called “standby support” will ensure financial protection from regulatory and litigation-related delays that are beyond the control of the project sponsors during the licensing phase.

Last month, just prior to the anniversary date of EPACT’s enactment, we issued the implementing rules for the risk insurance. While likely never needed, standby support provides sponsors of new plants the assurance their capital investment will be protected from delays that are outside their control.

Production tax credits are another incentive aimed at addressing financial risks first sponsors of new nuclear plants may face. We are working with the U.S. Department of Treasury to establish tax credits for the first eight years of operation for 6,000 megawatts of new nuclear power plants. The Treasury Department recently published guidelines for approving these tax credits, allowing us to move ahead in this process.

Government loan guarantees also help sponsors raise the substantial up-front capital necessary for low emission technologies such as nuclear power plants. Most importantly, loan guarantees can allow plants to be more highly leveraged. Increasing the debt-to-equity ratio can substantially reduce overall project cost, and lower the cost of power to the consumer.

The prospect of this new generation of nuclear power plants places important responsibilities upon the U.S. Nuclear Regulatory Commission and its ability to conduct the licensing processes in a timely and effective manner. That will be a key requirement for the success of the next generation of nuclear power plants in the United States.

NRC has stated that they are gearing up for these new applications. They expect more than 20 new nuclear power plants could be built over the next 15 years. In my opinion, this is a conservative estimate.

The nuclear industry is also gearing up to anticipate these new commitments. Two orders have been placed for procurement of long-lead time components for these plants – forgings. One consortia recently announced plans to establish a heavy component manufacturing base in the U.S. And, no secret to WNA members and those in the industry, this expansion will call for a substantial increase of capacity throughout the global nuclear fuel cycle.

One no longer has to be a visionary or dreamer to see that a new generation of nuclear power plants will emerge on the horizon.

What makes such progress possible? Certainly, increasing energy cost, demand, and concerns about clean air are driving decisions to build new nuclear plants. But a common theme weaves throughout much of these actions and progress, and that theme is partnership. U.S. Government and industry partnerships have been successful in facilitating progress that will lead to deployment of the next generation of nuclear power in the U.S.

Partnership and cooperation with other countries is also vital to stimulate other nations' use of nuclear power —safely and securely. That is the basis of the Global Nuclear Energy Partnership—GNEP—launched earlier this year by President Bush.

Global Nuclear Energy Partnership

GNEP is a comprehensive approach to increase global energy security. It will seek the expanded use of nuclear power as a clean energy resource while reducing the risk of nuclear proliferation.

A key component of GNEP is to support and participate in efforts encouraging countries to seek the benefits of nuclear power without constructing new enrichment and reprocessing facilities. This is a well recognized and vital matter that concerns all of us and which many of us are working on.

We have been working with other advanced nuclear nations to build consensus on productive approaches, incentives and safeguards. If we expect countries to forego fuel cycle activities, they must be assured of a credible international fuel supply, backed by designated supplies and governmental entities.

These efforts must build on the proven performance of the well-functioning international commercial nuclear fuel sector, and include the efforts and resources of the International Atomic Energy Agency.

In less than two weeks, we will participate in the 50th IAEA General Conference in Vienna. This conference will have a special focus on assurances of fuel supply and non-proliferation as a new framework for the utilization of nuclear energy in the 21st century.

It's also encouraging to note that the WNA has taken a strong and positive initiative to assist in these international efforts. The WNA Working Group on the Security of the International Nuclear Fuel Cycle has already proven to be a valuable asset in addressing key aspects of these issues.

It is abundantly clear that energy and security are inseparable. Along with promoting the benefits of nuclear energy, one of GNEP's goals is to develop and demonstrate advanced proliferation resistant technologies that are incorporated into the processing of spent nuclear fuel and also reduce nuclear waste products.

Having ceased reprocessing of spent fuel for decades, events have dictated that the United States review once again the merits of recycling spent nuclear fuel. We are now moving toward a new approach that includes the recycling of spent nuclear fuel using advanced technologies to increase proliferation-resistance, recovering and reusing fuel resources, and reducing the amount of wastes requiring permanent disposal.

Our strategy is to leverage the experience of existing, proven capabilities of industry and fuel cycle nations to bring new advanced recycle technologies into commercial operation in the United States. We are also examining how to incorporate advanced technologies that are close to deployment, in conjunction with those currently under development, to reduce the time and costs for commercial deployment.

Under GNEP, DOE is now reviewing a two-parallel-track approach to demonstrate technologies. The first track would involve deployment of commercial scale facilities. The two under consideration are a prototype Consolidated Fuel Treatment Center, which will be capable of separating used fuel into recovered fuel and waste components, and a prototype Advanced Burner Reactor that can convert transuranics into shorter-lived radioisotopes while producing electricity.

Under the second track we would pursue the separation of the minor actinides from spent fuel and the fabrication of fuel including these minor actinides together with plutonium and uranium for consumption in a fast reactor.

This approach enables us to explore the possibility of proceeding with the design and construction of those portions of the advanced recycling process that are currently well understood, while the development and qualification of the transmutation fuels is being completed. Both tracks would converge when this key development effort is completed.

We have asked industry for input on the feasibility of accelerating the development and deployment of a commercial scale advanced recycling facility and an advanced fast reactor in order to facilitate this convergence. The U.S. and other countries have engaged in their own research programs on advanced technologies while the world has significant experience with fast reactor technologies. Our collaboration will establish the technology enabling us sound, long-term solutions to the growing issue of used nuclear fuels.

As can be seen, the United States has undertaken substantial effort to re-incorporate recycling of used nuclear fuels to reduce the demands placed on our permanent repository. Operation of the Yucca Mountain repository is a key priority of this Administration with the current planning basis to begin operation as early as 2017. However, the capacity of Yucca Mountain will be oversubscribed in the next decade if used to store used fuel elements. With the recycling of actinides the Yucca Mountain repository could meet our waste management requirements for the rest of the century. GNEP is complementary with the U.S. geologic repository program.

As many of you in the international nuclear fuel cycle business recognize, the GNEP approach is not a new concept, but rather based on more than 40 years of international experience with fuel recycling and fast reactor technologies.

We are seeking international partners to further these efforts. One goal is to demonstrate an integrated, more proliferation-resistant, recycle capability that will destroy the transuranic actinide-bearing elements in a sodium-cooled fast reactor, thereby establishing a more secure global community. We believe this approach will attract global nuclear partnership—a partnership with benefits for all who participate. Presidents Bush and Putin, for example, in July at the G-8 affirmed their mutual support for GNEP and the Russian proposal for a fuel cycle center as means to broaden access to nuclear power while avoiding proliferation.

GNEP Progress and Goals

We recognize that the GNEP vision is ambitious. It is global, and it is long-range.

Nearly three decades ago the United States chose not to pursue nuclear fuel reprocessing and fast reactors. During that time, however, other countries have continued to achieve substantial experience in these areas.

I trust that the new approaches I have described to you today demonstrate that we are not stuck in the past. We are taking an integrated, can-do approach to meet our national nuclear power requirements and goals.

We are basing these efforts on proven technologies. And we are seeking to work with other nations and industry to ensure that the global expansion of nuclear power benefits from partnerships.

The WNA has played a vital international role in all aspects of the commercial nuclear fuel cycle and in its various issues and prospects. We look forward to the continuation of that role, as well as helping facilitate the successful expansion of nuclear power with all appropriate safeguards.

Thank you.